

LONDON- WEST MIDLANDS ENVIRONMENTAL STATEMENT

Volume 5 | Technical Appendices

CFA17 | Offchurch and Cubbington
Construction assessment (SV-003-017)
Sound, noise and vibration

November 2013

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Department for Transport

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Appendix SV-003-017

Environmental topic:	Sound, noise and vibration	SV
Appendix name:	Construction assessment	003
Community forum area:	Offchurch and Cubbington	017

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1 Introduction

1.1.1 The sound, noise and vibration appendices comprise four sections. The first of these is an introduction to the relevant route-wide methodology, assumptions and assessment (Volume 5: Appendix SV-100-000). This relates to the sound, noise and vibration assessment for all community forum areas (CFA).

1.1.2 For the Offchurch and Cubbington community forum area (CFA17), the other three sections are as follows:

- baseline sound, noise and vibration (Appendix SV-002-017);
- construction sound, noise and vibration (Appendix SV-003-017) (this appendix); and
- operational sound, noise and vibration (Appendix SV-004-017).

1.1.3 The outcomes of the assessment are summarised in Volume 2: CFA17 Report, Section 11 Sound, noise and vibration.

1.1.4 Maps referred to throughout the sound, noise and vibration appendices are contained in the Volume 5 map book.

1.1.5 This appendix presents the likely noise and vibration impacts, effects and significant effects arising from the construction of the Proposed Scheme for the Offchurch and Cubbington area on:

- people, primarily where they live ('residential receptors') in terms a) individual dwellings and b) on a wider community basis, including any shared community open areas; and
- community facilities such as schools, hospitals, places of worship and also commercial properties such as offices and hotels, collectively described as 'non-residential receptors' and 'quiet areas'.

1.1.6 The assessment of likely impacts, effects and significant effects from construction noise and vibration on agricultural, community, ecological or heritage receptors and the assessment of tranquillity are presented in the following documents within Volume 5:

<ul style="list-style-type: none"> • Agriculture, forestry and soils • Community • Ecology • Heritage • Landscape and Visual 	<ul style="list-style-type: none"> Appendix AG-001-017 Appendix CM-001-017 Appendix EC-005-017 Appendix CH-003-017 Appendix LV-001-017
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1.2 Evaluation of impacts and effects

1.2.1 This appendix provides a quantitative assessment of construction noise and vibration impacts/effects and a qualitative assessment of likely significant effects, based on the

impacts/effects identified and other local context information consistent with the scope and methodology defined for the Proposed Scheme.

- 1.2.2 Indirect effects arising from temporary changes in traffic patterns on the existing road network, as a consequence of constructing the Proposed Scheme, are also reported in this appendix, where they would occur within the study area as defined in Volume 5: Appendix SV-001-000.
- 1.2.3 In undertaking the assessment of sound and vibration, consistent with Environmental Impact Assessment (EIA) Regulations and emerging National Planning Practice Guidance¹, a differentiation between impacts effects, adverse effects and significant effects is made. Further information is provided in Volume 5: Appendix SV-001-000.
- 1.2.4 The assessment of impacts and effects has been undertaken at assessment locations that are representative of a number of dwellings or other sensitive receptors. The Assessment Locations employed in this assessment are presented on map series Sv-03 in the CFA17 Volume 5 sound, noise and vibration map book.

¹ Information is provided in the emerging National Planning Practice Guidance – Noise <http://planningguidance.planningportal.gov.uk>, refer to the noise exposure hierarchy.

2 Scope, assumptions and limitations

2.1 Regional and local policy guidance

2.1.1 The policy framework for sound, noise and vibration is set out in Volume 1 and in Appendix SV-001-000. As part of the engagement with local authorities through the Planning Forum Sub Group - Acoustics, information regarding any specific local planning guidance in respect of noise and vibration has been requested. Whilst no information has been received for this study area via the Planning Forum Sub Group - Acoustics, the following local policy guidance on noise and vibration has been identified:

- Warwick District Council - Local Plan - 1996 to 2011.

2.1.2 This guidance has been considered as part of formulating the detailed application of the impact and significance criteria set out in Volume 5, Appendix SV-001-000.

2.2 Engagement

2.2.1 Details of engagement on a route-wide basis with the local and county authorities' Environmental Health Practitioners via the Planning Forum Sub Group - Acoustics, is set out in Volume 1.

2.2.2 Engagement with communities has been via the Community Forums, as set out in Volume 1. In respect of sound, noise and vibration the following discussions have taken place:

- general discussions in respect of local issues, including possible ways to avoid and mitigate the potential impacts of noise or vibration
- September / October 2012; a specific presentation about sound, noise and vibration with discussion afterwards with one of the project team specialists;
- November / December 2012; specific request for the Community Forum to propose baseline sound monitoring locations;
- January / February 2013; feedback to the Community Forum on any proposed baseline monitoring locations; and
- verbal / written response to questions about sound, noise and vibration.

2.3 Methodology

2.3.1 The methodology used for the assessment of airborne sound, ground-borne sound and vibration impacts and the determination of significant effects is defined in the Scope and Methodology Report (SMR) (Volume 5: Appendix CT-001-000/1), is clarified in a number of areas by the SMR addendum (Volume 5: Appendix CT-001-000/2). Further information is contained in Volume 5: Appendix SV-001-000.

2.4 Assumptions

2.4.1 Route-wide assumptions are outlined in Volume 1 and are further detailed in Appendix SV-001-000. Local assumptions that apply to the assessment of construction sound noise and vibration within this CFA are set out in Volume 2: Report 17.

2.5 Limitations

2.5.1 The route-wide limitations and the approach adopted to assure that they will not impact the robust assessment of sound, noise and vibration are presented in Appendix SV-001-000. In this area, there are a number of locations where the land or property owners did not permit baseline sound level monitoring to be undertaken at their premises. However, sufficient information has been obtained to undertake the assessment. Further information is provided in Volume 5: Appendix SV-002-017.

3 Environmental baseline

Existing baseline

3.1.1 Baseline sound level data has been collected at locations representative of the airborne sound-sensitive receptors. The existing and future baseline airborne sound levels derived from these measurements are given in Volume 5: Appendix SV-002-017. Details of the baseline data collection and the methodology are given in Volume 5: Appendix SV-001-000 and specifically for this study area in Volume 5: Appendix SV-002-017.

Future baseline

3.1.2 The assessment of noise from construction activities assumes a baseline year of 2017, which represents the period immediately prior to the start of the construction period. As a reasonable worst case, it has been assumed that no change in baseline sound levels will occur between the existing baseline (2012/13) and the future baseline year of 2017. The assessment of noise from construction traffic assumes a baseline year of 2021, representative of the middle of the construction period when the construction traffic flows are expected to be at their peak. Further information can be found in the Traffic and Transport assessment (Appendix TT-001-017).

4 Effects arising during construction

4.1 Introduction

4.1.1 The assessment is reported first for ground-borne sound and vibration and then for airborne sound. Under each of these headings, the results of the quantitative identification of impacts and effects are presented. This is followed by the identification of significant effects and the evidence used to support these conclusions.

4.1.2 The structure of this assessment report is:

- Avoidance and mitigation measures
- Quantitative identification of impact and effects
 - Ground-borne sound and vibration
 - Residential
 - Non-residential
 - Airborne sound
 - Residential
 - Non-residential
- Assessment of impacts and effects
 - Residential receptors: direct effects – dwellings
 - Residential receptors: direct effects – communities
 - Residential receptors: indirect effects
 - Non-residential receptors: direct effects
 - Non-residential receptors: indirect effects
 - Cumulative effects from the proposed scheme and other committed development

4.2 Avoidance and mitigation measures

4.2.1 These are set out in Volume 2: Report 17.

4.3 Quantitative identification of impacts and effects

Ground-borne vibration

4.3.1 Assessment locations defined for the quantitative assessment of impacts are shown on map series SV-02 in the CFA17 Volume 5 sound, noise and vibration map book.

4.3.2 For each Assessment Location, the assessment results for residential and non-residential receptors are presented in Table 1. Explanation of the information in Table 1 is provided in Appendix SV-001-000, with the following additional notes:

Appendix SV-003-017 | Effects arising during construction

- Where the significant effect column is highlighted, then a significant effect is identified at the referenced community, or individual receptor.
- * Significant effect – the quantitative impact methodology has identified either:
 - 1) no impact at this receptor but further information (see assessment) has identified that a significant effect is nonetheless likely; or
 - 2) an impact at this receptor which, based upon further qualitative receptor information, (see assessment text) does not give rise to a significant effect
- ~ Significant effect – the forecast adverse effects are not considered to be significant on a community basis (further information on methodology is provided in Volume 5: Appendix SV-001-000)
- A Type of effect – adverse effect
- S Type of effect – significant adverse effect
- NA Type of effect – not generally an adverse effect
- B Type of effect – for non-residential receptors further detail about the type of effect is set out in the text of Volume 5: Appendix SV-001-000
- V1 Type of receptor – (V1) vibration sensitive research and manufacturing, hospital, and university equipment, (V2) hotels, hospital wards and education dormitories, (V3) offices, schools and places of worship, (V4) workshops
- T Receptor design – typical
- S Receptor design - special

Table 1: Assessment of construction induced ground-borne vibration at residential receptors

Assessment location		Impact criteria				Significance criteria							Significant effect	
ID	Area represented	Peak particle velocity (PPV) [mm/s] on foundation	Typical/highest monthly indoor vibration dose value (VDV) [m/s ^{1.75}]		Construction activity resulting in highest forecast vibration levels	Type of effect	Number of impacts	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect
			Day 0700-2300	Night 2300-0700										
234937	Long Itchington Road, Offchurch, Leamington Spa	0.12	0.06 / 0.06	-	Earthworks	NA	3	R	T	-	-	-	-	-
235121	Hunningham Road, Offchurch, Leamington Spa	0.16	0.09 / 0.09	-	Earthworks	NA	1	R	T	-	-	-	-	-
235834	Long Itchington Road, Offchurch, Leamington Spa	0.17	0.05 / 0.05	-	Earthworks	NA	1	R	T	-	-	-	-	-
701071	Hob Lane, Burton Green, Leamington Spa	0.12	0.06 / 0.06	-	Burton Green Tunnel	NA	1	R	T	-	-	-	-	-
701073	Hunningham Road, Offchurch, Leamington Spa	0.12	0.07 / 0.07	-	Earthworks	NA	1	R	T	-	-	-	-	-

Airborne sound: direct impacts and effects

4.3.3 Activities associated with the construction phases of the Proposed Scheme would generate airborne noise. The assessment of the likely impacts and significant effects as a result of the construction noise has considered the effects on:

4.3.4 residential receptors, both as individual dwellings and communities;

4.3.5 non-residential receptors, including quiet areas;

4.3.6 For each type of receptor, subject to the screening distances identified, and based upon supplied plant information from engineers, the typical and highest monthly $L_{Aeq,T}$ noise levels from construction activities have been calculated at the façade of all assessment locations, which are representative of a number of receptors in the study area.

4.3.7 The assessment results, impact criteria and significance criteria for the assessment of the scheme at residential and non-residential receptors are presented in Table 2 and Table 3 respectively.

4.3.8 Explanation of the information within Table 2 and Table 3 is provided in Volume 5: Appendix SV-001-000, with the following additional notes:



Where the significant effect column is highlighted, then a significant effect is identified at the referenced community, or individual non-residential receptor

- * Significant effect – the quantitative impact methodology has identified either:
 - 1) no impact at this receptor but further information (see assessment) has identified that a significant effect is nonetheless likely; or
 - 2) an impact at this receptor which, based upon further qualitative receptor information, (see assessment text) does not give rise to a significant effect
- Significant effect – the forecast adverse effects are not considered to be significant on a community basis (further information on methodology is provided in Volume 5: Appendix SV-001-000)

A Type of effect – adverse effect

S Type of effect – significant adverse effect

NA Type of effect – not generally an adverse effect

B Type of effect – for non-residential receptors further detail about the type of effect is set out in the text of Volume 5: Appendix SV-001-000

R Type of receptor - residential

G Type of receptor - (G1) theatres, large auditoria and concert halls, (G2) sound recording and broadcast studios, (G3) places of meeting for religious worship, courts, cinemas, lecture theatres, museums and small auditoria or halls, (G4) schools, colleges, hospitals, hotels and libraries, and (G5) offices and general commercial premises

T Receptor design – typical

S Receptor design - special

H Existing environment – high existing ambient noise levels, day >75 dB, evening >65 dB or night >55 dB L_{pAeq} at the facade

L Existing environment – low existing ambient noise levels, day ≤45 dB, evening ≤45 dB or night ≤35 dB L_{pAeq} at the facade

NI Mitigation effect - identified as likely to qualify for noise insulation under the draft CoCP

Table 2: Assessment of construction noise at residential receptors

Assessment location		Impact criteria			Significance criteria							Significant effect		
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the facade [Assessment category A/B/C]			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700										
213490	Pinehurst, Cubbington, Leamington Spa	52/58 [B]	-	-	Road construction	NA	6	R	T	-	-	-	-	-
213631	Rugby Road, Cubbington, Leamington Spa	51/58 [B]	-	-	Road construction	NA	19	R	T	-	-	-	-	-
213764	Thorn Stile Close, Cubbington, Leamington Spa	53/58 [A]	-	-	Bridge superstructure	NA	8	R	T	-	-	-	-	-
213855	Three Cornered Close, Cubbington, Leamington Spa	51/57 [A]	-	-	Road construction	NA	14	R	T	-	-	-	-	-
216690	Coventry Road, Cubbington, Leamington Spa	51/62 [A]	-	-	Road construction	NA	1	R	T	-	-	-	-	-
231757	Fosse Way, Offchurch, Leamington Spa	49/55 [A]	-	-	Road construction	NA	3	R	T	-	-	-	-	-
232415	Welsh Road, Offchurch, Leamington Spa	55/60 [A]	-	-	Road construction	NA	1	R	T	-	-	-	-	-
232441	Welsh Road, Offchurch, Leamington Spa	55/57 [A]	-	-	Earthworks	NA	3	R	T	-	-	-	-	-
234433	Mill Lane, Cubbington, Leamington Spa	52/58 [A]	-	-	Balancing pond earthworks	NA	1	R	T	-	-	-	-	-
234564	Rugby Road, Cubbington, Leamington Spa	61/69 [B]	-	-	Road construction	NA	4	R	T	-	-	-	-	-
234681	Rugby Road, Cubbington, Leamington Spa	51/57 [C]	-	-	Retaining wall construction	NA	2	R	T	-	-	-	-	-
234744	Welsh Road, Offchurch, Leamington Spa	50/54 [A]	-	-	Road construction	NA	6	R	T	-	-	-	-	-
234760	Welsh Road, Offchurch, Leamington Spa	49/52 [B]	-	-	Road construction	NA	2	R	T	-	-	-	-	-

Assessment location		Impact criteria			Significance criteria							Significant effect			
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the facade [Assessment category A/B/C]			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect	
		Day 0700-1900	Evening 1900-2300	Night 2300-0700											
234863	Long Itchington Road, Offchurch, Leamington Spa	51/55 [A]	-	-	Earthworks	NA	4	R	T	-	-	-	-	-	
234899	Long Itchington Road, Offchurch, Leamington Spa	56/60 [A]	-	-	Earthworks	NA	3	R	T	-	-	-	-	-	
234937	Long Itchington Road, Offchurch, Leamington Spa	60/64 [A]	-	-	Earthworks	NA	3	R	T	-	-	-	-	-	
235066	Hunningham Road, Offchurch, Leamington spa	53/58 [A]	-	-	Bridge superstructure	NA	1	R	T	-	-	-	-	-	
235115	Hunningham Road, Offchurch, Leamington Spa	61/67 [A]	-	-	Utility diversion	A	2	R	T	-	-	-	14	-	~
235121	Hunningham Road, Offchurch, Leamington Spa	59/66 [A]	-	-	Utility diversion	A	1	R	T	-	-	-	2	-	~
235139	Ashlawns, Hunningham Road, Offchurch, Leamington Spa	60/66 [A]	-	-	Utility diversion	A	1	R	T	-	-	-	14	-	~
235157	Hunningham Road, Offchurch, Leamington Spa	47/51 [A]	-	-	Utility diversion	NA	2	R	T	L	-	-	-	-	
235796	Welsh Road, Offchurch, Leamington Spa	61/68 [C]	-	-	Utility diversion	NA	1	R	T	-	-	-	-	-	
235805	Fosse Way, Offchurch, Leamington Spa	63/74 [C]	-	-	Road construction	NA	4	R	T	-	-	-	-	-	
235834	Long Itchington Road, Offchurch, Leamington Spa	58/63 [A]	-	-	Earthworks	NA	1	R	T	-	-	-	-	-	

Assessment location		Impact criteria			Significance criteria									
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the facade [Assessment category A/B/C]			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect
		Day 0700-1900	Evening 1900-2300	Night 2300-0700										
235841	Long Itchington Road, Offchurch, Leamington Spa	56/64 [C]	-	-	Road construction	NA	2	R	T	-	-	-	-	-
700636	Thorn Stile Close, Cubbington, Leamington Spa	52/58 [A]	-	-	Bridge superstructure	NA	1	R	T	-	-	-	-	-
701072	Leicester Lane, Cubbington, Leamington Spa	58/68 [C]	-	-	Road construction	NA	1	R	T	-	-	-	-	-
701073	Hunningham Road, Offchurch, Leamington Spa	57/67 [A]	-	-	Road construction	A	1	R	T	-	-	-	5	-
701074	Fosse Way, Offchurch, Leamington Spa	64/72 [C]	-	-	Road construction	NA	4	R	T	-	-	-	-	-

Appendix SV-003-017 | Effects arising during construction

Table 3: Assessment of construction noise at non-residential receptors

Assessment location		Impact criteria			Significance criteria							Significant effect		
ID	Area represented	Typical/highest monthly outdoor L_{pAeq} [dB] at the facade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect
		Day 0700-1900	Evening 1900-2300/Weekend	Night 2300-0700										
213190	Office, Coventry Road	48/53	-	-	Bridge superstructure	B	2	G5	T	-	-	-	-	-
213706	Waverley Equestrian Training Centre, Coventry Road, Cubbington, Leamington Spa	49/55	-	-	Road construction	B	1	G4	T	-	-	-	-	-
213956	Office, Coventry Road, Cubbington, Leamington Spa	48/54	-	-	Road construction	B	1	G5	T	-	-	-	-	-
214812	Cubbington Brewery, High Street, Cubbington, Leamington Spa	44/49	-	-	Retaining wall construction	B	2	G5	T	-	-	-	-	-
215612	Cubbington Village Hall, Broadway, Cubbington, Leamington Spa	44/49	-	-	Retaining wall construction	B	1	G4	T	-	-	-	-	-
215976	General Commercial, Queens Street, Cubbington, Leamington Spa	46/52	-	-	Retaining wall construction	B	3	G5	T	-	-	-	-	-
216265	St Mary's Church, Cubbington, Leamington Spa	47/53	-	-	Retaining wall construction	B	1	G3	T	-	-	-	-	-
216416	Cubbington C of E Primary School, Cubbington, Leamington Spa	48/54	-	-	Road construction	B	1	G4	T	L	-	-	1	-
216690	Oakdene Day Nursery, Cubbington, Leamington Spa	51/62	-	-	Road construction	B	1	G4	T	-	-	-	2	-
231349	General Commercial, Welsh Road, Offchurch, Leamington Spa	50/54	-	-	Road construction	B	3	G5	T	-	-	-	-	-
233947	Offchurch Village Hall, Offchurch, Leamington	51/54	-	-	Earthworks	B	2	G3	T	-	-	-	-	-

Assessment location		Impact criteria			Significance criteria							Significant effect		
ID	Area represented	Typical/highest monthly outdoor L _{pAeq} [dB] at the facade			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact	Impact duration [months]	Mitigation effect
		Day 0700-1900	Evening 1900-2300/Weekend	Night 2300-0700										
	Spa													
233947	The Church Of Saint Gregory, Offchurch, Leamington Spa	51/54	-	-	Earthworks	B	2	G3	T	-	-	-	-	-
234251	General Commercial, Welsh Road, Offchurch, Leamington Spa	48/53	-	-	Road construction	B	1	G5	T	-	-	-	-	-
234674	Office, Rugby Road, Offchurch, Leamington Spa	46/52	-	-	Retaining wall construction	B	1	G5	T	-	-	-	-	-
235139	Offchurch Sports Club, Hunningham Road, Offchurch, Leamington Spa	60/66			Utilities diversion	B	1	G5	T	-	-	-	-	-
235157	General Commercial, Hunningham Road	47/51	-	-	Utilities diversion	B	2	G5	T	-	-	-	-	-
235841	Trade Distribution, Long Itchington Road, Offchurch, Leamington Spa	56/64	-	-	Road construction	B	2	G5	T	-	-	-	-	-
700653	Coventry Diocesan Retreat & Conference Centre	50/53	-	-	Road construction	B	1	G3	T	-	-	-	-	-
721018	Metcalfe Timber Ltd, Rugby Road, Cubbington, Leamington Spa	69/78	-	-	Road construction	B	1	G5	T	-	-	-	6	-
														CSV17-No1

Airborne sound: indirect effects

4.3.9 Construction road traffic associated with the construction phases of the Proposed Scheme would generate airborne noise. Based upon traffic information for the Proposed Scheme, the change in traffic noise level at a reference distance of 10m from the edge of the nearside carriageway resulting from the presence of construction traffic for a given road has been predicted. The results for potentially significant road links are presented in Table 4.

4.3.10 Explanation of the information within Table 4 is provided in Volume 5: Appendix SV-001-000, with the following additional notes:

 Where the significant effect column is highlighted, then a significant effect is identified on nearby communities or individual receptors

Change values

 Yellow denotes a minor impact – a change is of 3-5 dB or 1-3dB where a high existing sound level is identified

 Orange denotes a moderate impact – a change is of 5-10 dB or 3-5dB where a high existing sound level is identified

 Red denotes a major impact – a change is of >10 dB or >5dB where a high existing sound level is identified

Table 4: Assessment of construction traffic noise levels

Road name	Link	Future baseline sound level (dB)	Future baseline sound level + construction traffic (dB)	Change (dB)	Significant effect
		Daytime $L_{pA10,16hr\ 0700-23:00}$	Daytime $L_{pA10,16hr\ 0700-2300}$		
A425 Southam Road	B4452 to B4455 Fosse Way	69.4	70.2	+0.8	
B4455 Fosse Way	A425 Southam Road to Welsh Road	68.3	69.4	+1.1	
Welsh Road	B4455 Fosse Way to Ridgeway Lane	57.3	58.0	+0.7	
Welsh Road	B4455 Fosse Way to Hunningham Road	61.6	62.2	+0.6	
B4455 Fosse Way	Welsh Road to the Fosse Way main compound	67.9	68.1	+0.2	
Hunningham Road	Welsh Road to the river Leam viaduct Compound	48.3	51.2	+2.9	
B4453 Rugby Road	Coventry Road to the Cubbington retaining wall compound	63.9	64.8	+0.9	
B4453 Rugby Road	Coventry Road to Kenilworth Road	63.9	64.8	+0.9	
Coventry Road	B4453 Rugby Road to Coventry Road overbridge compound	60.5	60.9	+0.4	
Kenilworth Road	B4453 Rugby Road to A445 Leicester Lane	68.5	68.8	+0.3	
A445 Leicester Lane	Kenilworth Road / Westhill Road to the A445 Leicester Lane compound	69.1	69.2	+0.1	

4.4 Assessment of significant effects

Residential receptors: direct effects – individual dwellings

4.4.1 Taking account of the avoidance and mitigation measures set out in the previous paragraphs, no residential buildings are forecast to experience noise levels higher than the noise insulation trigger levels as defined in the draft CoCP. For daytime construction the trigger level is an equivalent continuous noise level of 75 dB² measured outdoors.

4.4.2 The mitigation measures, including noise insulation, will reduce noise inside all dwellings, such that it does not reach a level where it would significantly affect residents¹.

Residential receptors: direct effects – communities

4.4.3 The avoidance and mitigation measures in this area will avoid airborne construction noise adverse effects¹ on the majority of receptors and communities. Residual temporary noise or vibration effects are identified later in this section.

4.4.4 It is anticipated that there may be some night-time working during road and rail possession periods. Night-time construction activities in this area would be restricted to where the route crosses existing railway lines, roads or where newly constructed roads tie into the existing road network for reasons of safety, engineering practicability or to reduce the impact on existing transport. These works are likely to be of short duration, and be limited in the types of activities being undertaken. As a consequence, it is expected that the noise effects from night time activities would be limited in duration and hence would not be considered significant.

4.4.5 With regard to noise outside dwellings, the assessment of temporary effects takes account of construction noise relative to existing sound levels.

4.4.6 In locations with lower existing sound levels³, construction noise effects¹ are likely to be caused by changes to noise levels outside dwellings. These may be considered by the local community as an effect on the acoustic character of the area and hence be perceived as a change in the quality of life. These effects are considered to be significant when assessed on a community basis taking account of the local context³.

4.4.7 In this area, the mitigation measures reduce the effects of outdoor construction noise on the acoustic character around the local residential communities such that the effects are considered to be not significant.

Residential receptors: indirect effects

4.4.8 A minor impact, due to construction traffic, is predicted along the B4455 Fosse Way. Taking account of incorporated mitigation, the limited number of properties adjacent to this road and the predicted change in traffic noise levels; no indirect construction noise significant effects have been identified.

4.4.9 In certain instances a qualitative assessment has been undertaken. This was the case for assessment of noise due to construction traffic along Westhill Road, the B445

² L_{pAeq,0800-1800} measured at the facade.

³ Further information is provided in Volume 5: Appendix SV-001-000.

Fosse Way south of the A425 Southam Road junction, the B4100 Banbury Road and the A453 Warwick Bypass.

4.4.10 Along Westhill Road construction vehicle numbers are assumed to be similar to those on Kenilworth Road and the A445 Leicester Lane, for which an increase of 0.3 and 0.1 dB respectively is predicted, as a consequence no significant temporary effect is considered likely as a result of their use.

4.4.11 Along the B445 Fosse Way south of the A425 Southam Road junction, the B4100 Banbury Road and the A453 Warwick Bypass, construction vehicle numbers are assumed to be similar to those of both the B4455 Fosse Way and the A425 Southam Road. The increase in noise due to construction traffic is anticipated to be +1dB. Taking account of incorporated mitigation, the number of properties adjacent to these roads and the predicted levels, no indirect construction noise significant effects have been identified as a result of their use.

Non-residential receptors: direct effects

4.4.12 Significant construction noise effects have been identified on a worst case basis on the following non-residential receptor, the typical and worst case noise levels are reported to the nearest 5 dB:

4.4.13 Metcalfe Timber & Builders Merchants, a commercial property located adjacent to Rugby Road in the vicinity of North Cubbington Wood (CSV19-No1). Metcalfe Timber & Builders Merchants operates from a three acre site which contains two large warehouses, one located at the entrance and the other at the rear of the site along with a wood treatment plant building. The warehouse closest to the entrance contains office space which it is assumed is naturally ventilated via openable windows in the building's facade. The main function of the receptor is located outside. A significant daytime effect is predicted on the offices over a period of six months commencing in 2019, reaching a maximum of 80dB³, due to a range of construction activities including ground engineering works associated with B4453 Rugby Road realignment, a footpath diversion and a utility diversion.

4.4.14 An exceedance of the daytime construction noise impact criteria has been identified at Cubbington C of E Primary School located on the eastern edge of Cubbington. The school operates from a number of brick built single-story buildings with flat roofs and a single-story brick built building with a pitched roof and tiles, all have openable windows and it is assumed that ventilation is provided by the opening of windows. All children have access to outdoor spaces which incorporates both a playground and sports fields. Noise levels, at the building facade closest to the construction activities, exceed the daytime criteria by 1dB for a total of one month commencing in 2018, due to ground engineering works associated with realignment of the B4453 Rugby Road. All reasonably practicable measures to further reduce or avoid a significant effect during construction would be undertaken. On this basis, due to the magnitude of the exceedance and its limited duration, no significant effect is identified at Cubbington C of E Primary School.

Non-residential receptors: indirect effects

4.4.15 Significant noise effects on non-residential receptors arising from construction traffic are unlikely to occur in this area.

Cumulative effects from the Proposed Scheme and other committed development

4.4.16 This assessment has considered the potential cumulative construction noise effects of the Proposed Scheme and other committed developments⁴. In this area, there is no committed development that would be built at the same time as the Proposed Scheme and accordingly, construction noise or vibration from the Proposed Scheme is unlikely to result in any significant cumulative noise effects.

⁴ Refer to Volume 5: Appendix CT-004-000.